Policy Issues for the Water and Sanitation Sectors

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Executive Summary

In devising policy for Latin America's infrastructure sector, it is important to distinguish between the *problems* afflicting the sector, and their fundamental causes. The hypothesis put forward in this paper is that these fundamental causes can be characterized as the failure to separate poachers from gamekeepers, and the politicization of management.

With the noteworthy exception of certain "flag-ship" public sector providers of water services, Latin America's water and sanitation sector shows moderate but highly heterogeneous rates of connection, and low levels of operational efficiency and cost recovery.

The key distinguishing characteristics of the water and sanitation sector relative to other public utilities are identified as the low ratio of value to transportation costs making for highly fragmented distribution networks; the virtual absence of any scope for direct competition *in* the market; and the strong social character of the service as a result of positive social and negative environmental externalities in consumption.

Building on the analysis of the sector's distinguishing characteristics, the key economic issues facing the industry in Latin America are: the degree of centralization of the operations; the extent to which competition *for* the market can be effectively used to improve sector conditions; and the scope for reform of social policy toward the consumption of water and sanitation services.

As far as the optimal horizontal structure of the industry is concerned, the analysis suggests that this is a multidimensional question, which goes beyond the traditional considerations of operational and managerial efficiency to encompass the wider issues associated with environmental management, private sector participation, investment finance, regulatory control, and social policy.

Analysis of the role of competition *for* the market suggests that experiments to date have been largely confined to the metropolitan areas of the larger countries in the region, where economic and sectoral conditions are comparatively favorable. As privatization experiments are extended to smaller countries and rural areas, it will be important to evaluate the extent to which privatization can actually *bring about* sectoral improvements, rather than simply *necessitating* them as a prerequisite for its successful implementation.

As far as social policy is concerned, the analysis suggests that even those countries which are not being *compelled* to reconsider their social policy as a result of some privatization initiative would nonetheless benefit from fundamental reforms. Such reforms should be based on the answers to three key questions regarding the objectives of social policy; the sources of funding and the instruments of implementation. There is some empirical evidence to suggest that traditional social policy has focused excessively on the issue of affordability to existing users, at the expense of promoting access to those not yet connected to the network.

Finally, any country contemplating a reform of its water and sanitation sector should bear in mind that structural issues must be settled in advance of ownership issues; privatization measures should be considered as lying on a continuum as opposed to constituting an all-or-nothing choice; and regulation is likely to play a role, even where privatization measures are not considered feasible or desirable.

Introduction

The decade of the 1990s is witnessing something of a revolution in the modes of provision of traditionally state-owned infrastructure services throughout the developing world. The Latin American and Caribbean region has been at the forefront of these developments, with a number of countries initiating comprehensive, radical and often very innovative public service reform programs.

These experiments in restructuring, privatization and regulation have often begun—and proceeded furthest—in the power and telecommunications sectors. Owing to their technological and economic characteristics, these sectors present the greatest scope for the emergence of a competitive market and are often the most attractive to private sector capital. However, a number of countries have also been taking concrete steps to extending such reforms to the water and sanitation sector, often regarded as the most quintessentially public of the public services.

Given the importance of water and sanitation loans in the Bank's portfolio of infrastructure projects and the significance of the measures that are underway throughout the region, this discussion paper aims to identify those particular features of the water and sanitation sector which distinguish it from other infrastructure services and which will consequently merit special attention by countries engaging in such reforms.

The paper is structured along the following lines:

- The second section provides a generic overview of the institutional problems facing state-owned providers of public services.
- The third section provides an overview of the water and sanitation sector in Latin America and identifies the special characteristics which distinguish water and sanitation from other infrastructure services.
- The fourth section discusses policy responses to three key economic issues: optimal sector structure, the scope for privatization, and the redesign social policy.
- The fifth section draws out the main conclusions from the discussion.

The Infrastructure Problem

Any policy package aimed at improving public services in Latin America and the Caribbean needs to be based on a sound theoretical understanding of the problems which have traditionally afflicted the infrastructure sectors. Figure 1 is a graphical representation of one such hypothesis which has been attracting an increasing degree of consensus in recent years (Blanlot, 1995; Dussan, 1995)

One of the key features of Figure 1 is that it attempts to distinguish between the causes of the problem and their ultimate consequences or, to use a medical analogy, between the underlying

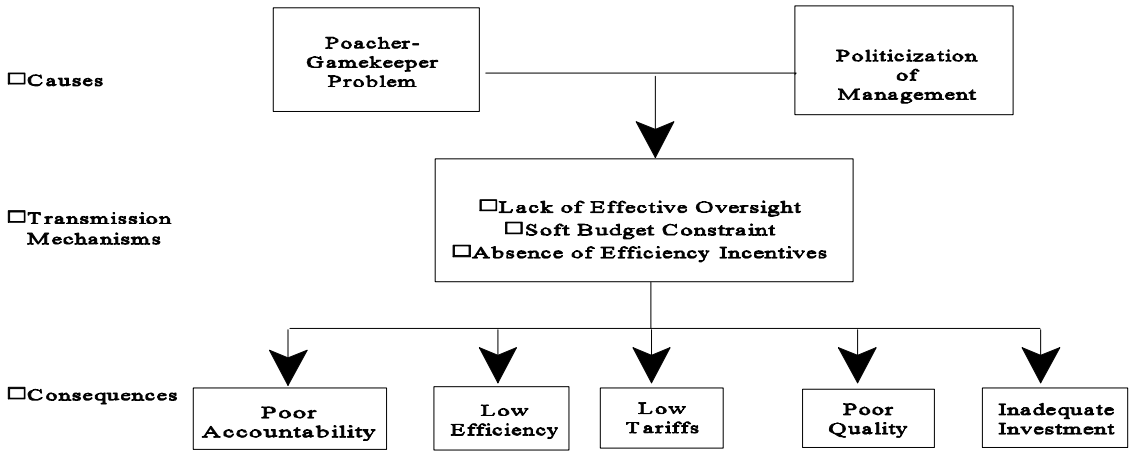
disease and its external symptoms. The symptoms exhibited by the infrastructure sector in the region are familiar enough. There are insufficient investment, poor quality of service, low tariff levels, low levels of efficiency, and lack of accountability to customers. Historically, there has been a tendency to direct efforts toward attacking these superficial symptoms of the problem, often by relying on direct technical assistance. However, more recently there has been a growing recognition that such interventions are likely to be ineffectual unless they are preceded by more fundamental reforms which attempt to rectify the problem at the level of underlying causes. The two underlying causes identified here are:

- the poacher–gamekeeper problem: that is, the confusion or juxtaposition of regulatory and operational roles in state-owned enterprises; and
- the politicization of management: that is, the tendency to base decisions on political rather than technical or commercial criteria as a result of external influences from government.

The argument depicted in Figure 1 is that these two institutional defects—by preventing effective oversight, softening the budget constraint of the enterprise, and diluting efficiency incentives—serve to bring about the familiar range of problems affecting the public provision of infrastructure services.

There is obviously room for discussion regarding the precise specification of the model, and indeed the diagrammatic representation presented above is intended to be suggestive rather than definitive. However, what is clear is that some model of this nature is required to guide reform measures in this area. Based on the two fundamental causes identified here, the following subsections examine the practical strategies available to address the problems of separating roles and depoliticizing management.

Figure 1: A Model of State-Owned Enterprise Failure



Separating Poachers and Gamekeepers

The process of the separation of roles entails three distinct stages, which are summarized in Table 1, as follows:

- the identification of the different roles that exist (see column one);
- the allocation of these roles between the private and public sectors (see column two); and
- the allocation of these roles between different tiers of government (see column three).

Since the second and third issues will receive more extensive comment below, the discussion here focuses on the question of identifying the separate roles. This may not be straightforward when they have been blurred for some time within a single institution. Table 1 attempts to be comprehensive in identifying five key roles, though some countries have taken the separation process further by distinguishing between the formulation of regulatory rules and their enforcement. An example is the Colombian water sector, where the former function is undertaken by a sector-specific regulatory commission (*Comisión Reguladora de Agua*), and the latter by a cross-sectoral superintendency (*Superintendencia de Servicios Públicos*).

In addition to the need to separate the first three quintessentially public sector roles from the last two roles which might potentially be discharged by the private sector, a question arises as to whether each of the five functions should be allocated to a *separate* institution *within* the corresponding sector. In practice, this is a question of whether operations should be separated from investment within the sphere of service provision, and whether strategy, regulation and social policy should be separated from each other and overseen by government.

In the case of the service provision function, there are examples both of:

- public sector operations complemented by private sector investment via build-operate-transfer (BOT) contracts; and
- private sector operations complemented by public sector investment finance, typically in the context of lease contracts.

Table 1: The Separation of Roles

Distinct Roles	Type of Provision	Level of Provision
Sector Strategy	Public	Central
Social Policy	Public	Central
Regulation	Public	Central or Local
Investment	Public or Private	Central or Local
Operations	Public or Private	Central or Local

While it may not always be feasible to discharge both of these aspects of service provision within the same institutional context, experience with lease contracts particularly suggests that it may be highly desirable to do so. The examples of water lease contracts in Guinea and the Ivory Coast illustrate the serious coordination problems that may arise when investments are undertaken by a public sector investment finance agency and operations are in the hands of a private operator, potentially leading to an inefficient configuration of capital investments (OXERA/World Bank, 1995).

In the case where government is the overseer, to the extent that the three facets of strategy, regulation and social policy entail mutually conflicting considerations, there may be some virtue in allocating them to different arms of government. While it is not unusual for strategic issues to be retained by government and regulation to be delegated to an autonomous agency, it is less common for social policy to be explicitly hived off from other aspects of water sector oversight. An interesting example of this is the Chilean direct subsidy scheme which was introduced as part of that country's national water sector reform process.

However, where the three roles identified are institutionally separated, it is important to ensure an adequate degree of coordination between the relevant government entities.

The Depoliticization of Management

Table 2 illustrates the range of institutional options for the provision of infrastructure services that have been adopted throughout the continent.

Historically, in Latin America, water services have often been provided directly by government agencies, though there has been a trend towards the creation of autonomous corporatized state-owned entities (Blanlot, 1995). In countries such as Colombia, the hybrid approach of mixed private/public sector enterprises has also been adopted. While elsewhere, such as in Bolivia, user-owned cooperatives have proved to be a successful vehicle for the provision of public services. More recently a number of countries have begun to experiment with private sector involvement.

A key question is how far along the spectrum from private to public provision it is necessary

Table 2: The Range of Available Institutions

	Political Independence	Efficiency Incentives
Public Provision	Low	Absent
Corporatized State-Owned Enterprise	Medium Low	Absent
Mixed Private/Public Enterprise	Medium High	Partially Present
Cooperatives	High	Present
Private Provision	High	Present

to go before an effective depoliticization of management is achieved. The answer is likely to depend on the nature of the political system in each country. In some cases, it may be that the radical solution of private sector participation is the only way to break the political hold over water and sanitation services. However, there is a danger that a country may not be able to commit to a credible and autonomous regulatory framework, thereby reintroducing political pressures under a different guise even where private sector participation has been espoused.

Although the intermediate institutional models may be successful in achieving some measure of depoliticization within the public sector, they do not of themselves ensure that efficiency incentives will be introduced. Only under the cooperative framework (where there is a close identification between the interests of management and the interests of customers), or under privatization (where there is a close identification between the interests of management and the interests of shareholders) will a clear incentive for efficient managerial behavior arise.

Characterization of the Latin American Water Sector

A Sectoral Overview

Turning now to the special features of the water and sanitation sector, and the specific circumstances of that sector in Latin America and the Caribbean, Table 3 provides a number of overview statistics. The table yields four key insights.

First, the average water and sewerage connection rates for the region are moderately high, but may overstate the true position when one takes into account the incidence of extreme quality of service deficiencies (with respect to potability and continuity); and the prevalence of relatively basic versions of the two services (such as septic tanks which make up 31% of urban sewerage provision, or standpipes which constitute 11% of urban water provision).

Second, the average connection rates hide a considerable degree of diversity in the levels of access between: urban and rural sectors (with the latter lagging 20 to 40 percentage points behind the former); different countries (ranging from universal coverage to minority coverage); and diverse social strata (with differences in connection rates sometimes in excess of 50 percentage points between the highest and lowest income quintiles within a particular country).

Third, only a small proportion (10%) of the region's wastewater undergoes treatment.

Fourth, The operational indicators illustrate the low level of efficiency of water and sewerage provision with unaccounted for water at up to three times the rate prevalent in OECD countries; and labor-based efficiency indicators up to six times the levels prevalent in OECD countries.

Fifth, the proportion of operating costs covered by water tariffs for those countries for which data is available is as low as 27%, indicating the magnitude of the political problems which are likely to arise when attempting to raise tariffs to cost recovery levels.

Table 3: Overview Statistics

	Average	Low	High
Water Connection Rates	80%	8%	100%
Urban	89%	--	--
Rural	57%	--	--
Sewerage Connection Rates	67%	30%	100%
Urban	80%	--	--
Rural	34%	--	--
Proportion of Supplies from Groundwater	50%	--	--
Proportion of Wastewater Treated	5%-10%	--	--
Unaccounted for Water	40%-60%	34%	--
Cost Recovery Rate	27%-43%	--	--
Employees per 1000 Connections	10-20	5	--
Salaries as % of Total Cost	>50%	<40%	
Sources: Blanlot, 1995; PAHO, 1994; Yepes, 1990.			

However, it would be wrong to suggest that the water and sanitation sector in Latin America presents a uniformly gloomy panorama. There have been some notable success stories for water utilities operating within the public sector, which are worthy of study and emulation. Yepes (1990) identifies a sample of the leading water utilities in Latin America whose performance on a variety of efficiency indicators lies closer to the OECD average than to the average for the rest of the Latin American continent. They are: from Colombia, ACUAVALLE (Cali) and EPM (Medellin); from Mexico, CAD (Monterrey); from Brazil, COPASA (Minas Gerais); and from Chile, EMOS (Santiago).

The study attempts to identify some of the common features of these companies which explain their superior performance, and stresses in particular the importance of the following characteristics:

- adequate tariff levels based on the principle of cost recovery;
- stability of tenure in managerial posts;
- the existence of good cost accounting systems;
- the use of private subcontractors; and
- a strong customer focus.

However, many commentators, including Yepes, have emphasized the existence of a strong institutional culture, encompassing both a high degree of professionalism among staff and a sense of pride and ‘ownership’ within the local community. It seems probable that it is such intangibles which lie at the root of the success of these enterprises, and that the various features of the institutions outlined above are

the outward manifestations rather than the underlying causes of this success. This observation has important implications for the possibility of replicating these experiences elsewhere.

Special Features

From this sectoral overview, it is possible to identify three special features of the water and sanitation sector which set it apart from other public service industries. These special features have both an economic and a political dimension, as highlighted in Table 4.

Table 4: Special Features of the Water Sector

Issue	Economic Dimension	Political Dimension
Horizontal Structure	Fragmented Networks	Municipal Control
Responsibility for Provision	Limited Scope for Competition	Desire to Retain Public Sector Control
Social Policy	Health/Environmental Externalities	Strong Ideological Character

First, unlike other public services, the vertical structure of the water and sanitation sector is a relatively uncontentious issue, with the majority of countries adopting a vertically integrated approach to the provision of clean and dirty water services. This structure is quite readily justified both on the grounds of internalizing the environmental externalities associated with the discharge of sewage, and of sanctioning the nonpayment of sewerage services which cannot be disconnected (Blanlot, 1995).

However, the horizontal structure of the industry exhibits an extremely wide degree of variation across countries, ranging from single nationwide entities (for example, IDAAN in Panama), to large regional enterprises (such as the regional water companies in Chile), to fragmented municipal provision (as is often the case in Colombia).

The possibility of adopting a highly decentralized model of provision is derived from the technological characteristics of water networks themselves. Specifically the relatively low unit value of water relative to its costs of transportation prevents the construction of a large integrated national transmission grid as is commonplace in the electricity industry, and tends to produce instead a set of highly fragmented local distribution networks. These technological features are often reflected politically in a history of municipal control of the sector. For example, the new Colombian constitution explicitly places the responsibility for these services in the hands of the municipalities. Thus, the major structural issue in any reform of the water and sanitation sector is to identify the appropriate degree of decentralization in any particular case.

Second, the technological characteristics of the water and sanitation sector which tend to produce the fragmentation of distribution networks tend also to preclude the development of competition *in* the market. The model of electricity generation plants competing to produce electricity through a pool mechanism, cannot plausibly be applied to the case of water treatment plants. An important reason for this is that the fragmentation of distribution networks

limits the number of economically efficient treatment plants that can be built to supply any particular conurbation. A further complication is that water, unlike electricity, is not an homogeneous product. Thus, any implementation of third party network access would require careful monitoring of the quality of the water that was being delivered into the distribution system.

Consequently, discussions of the role for competition in the water sector have tended to confine themselves to the mechanism of competition *for* the market. Such an approach to the development of competition has the further advantage of retaining the ownership, or at least the ultimate ownership, of water and sanitation infrastructure within the public sector. This can be politically attractive, when the only other privatization alternative is the creation of a privatized monopoly via a sale of assets (along the lines of that which has been undertaken in England and Wales). Moreover, in many developing countries it may be the only feasible way of introducing private-sector participation into a sector which often presents a relatively unattractive commercial environment to the private investor.

Third, water and sanitation services are often identified as having the strongest social characteristics of any of the public utility industries. In economic terms, this is a result of the significant externalities associated with the use of such services, which can be both positive (in terms of public health benefits) and negative (in terms of environmental degradation). In addition, the fundamental need for water as a basis for human survival, and the acute competition for the resource in arid countries, have combined to make access to water a highly political issue. As a result, the disconnection of the water service is often considered socially unacceptable, and in some countries (for example, Mexico) has been made illegal. This feature of the sector can often come into conflict with programs to increase the commercialization of service provision.

Policy Responses

Optimal Sector Structure

As noted above, the water and sanitation sector displays a wide degree of horizontal forms of organization across countries. The consideration of the optimal horizontal structure of the industry has traditionally only been considered in the narrow economic context of economies of scale as reflected in the technological cost structures facing the industry. Hence, the focus has been on operational and managerial efficiency.

Even on these relatively narrow criteria there is some disagreement as to where the minimum efficient scale lies, and much seems to depend on whether the question is posed at the plant level or at the level of the overall business unit. For Latin America, Yepes (1990) presents evidence of continuously improving efficiency levels over a range of population served from 10,000 to 1,000,000.

However, it seems likely that many of the efficiency gains associated with serving larger units come from the economies of density arising in large conurbations. Thus, one cannot *necessarily* infer from such data that it would be optimal for the provision of dispersed rural

Table 5: The Multiple Dimensions of Optimal Scale

Consideration	Criterion for Determining Optimal Scale
Operational Efficiency	Volume Supplied>Minimum Efficient Scale
Managerial Efficiency	Minimize Management Costs per Unit Volume
Environmental Preservation	Scope of Hydrographic Basin
Private Participation	Minimum Size of Commercially Viable Unit
Investment Finance	Minimize Cost of Capital
Regulatory Control	Feasibility of Overseeing Number of Enterprises
Social Solidarity	Adequate Basis for Cross-Subsidy

communities to be agglomerated in the same way.

The purpose of this section is to broaden the debate on the optimal structure of the water and sanitation sector by acknowledging the existence of a number of other important considerations which should influence the choice of sector structure. In practice, each of these different considerations may point to a different degree of centralization or decentralization. Thus, there may be no unique answer to the question of optimal scale, necessitating a prioritization between the different dimensions of the problem, or possibly the allocation of different aspects of sectoral activity to different institutions each with its own optimal geographical scope of jurisdiction. These multiple dimensions of optimal scale are summarized in Table 5.

Perhaps the most obvious additional facet of the optimal structure of the water and sanitation sector is the issue of environmental management and protection. Unlike the other public utility services, the water and sanitation sector is essentially a man-made adjunct to the natural water cycle whose geographical basis is the hydrographic basin. Water users within a particular hydrographic basin will necessarily impose externalities upon each other in terms of both abstraction and discharge. This raises the need either to internalize these externalities by organizing the industry according to hydrographic boundaries, or at least to base the regulation of abstractions and discharges on a holistic view of the river basin.

The concept of integrated river basin management was the guiding principle behind the reorganization of the water sector in England and Wales in 1973, forming, from a large number of dispersed municipal providers, ten water authorities based around the major river basins. Whether or not the hydrographic unit should be the driving consideration in determining the optimal sector structure in Latin America will depend upon a number of considerations:

- population density, and the geographic dispersion of the population relative to the major hydrographic features of the country, which will affect the degree of environmental tension between water users;
- the size and distribution of river basins relative to intranational and international political boundaries, and to

the overall size of the country, which may affect the administrative feasibility of implementing this principle; and

< the availability of resources for solving water use conflicts through regulatory mechanisms; where there is limited regulatory capacity the resolution of these conflicts via the internalization of the externalities may be a relatively attractive approach.

A second consideration surrounds the issue of private sector participation. Any policy toward privatization of the water sector ought to take place in the context of a holistic view of the ultimate scope for such measures at a national level. In devising such a national policy toward private sector involvement, it is important to bear in mind the following two points:

< there will, in general, be a minimum viable size of contract for private sector involvement, given the significant fixed costs associated with bidding for a franchise award; and

< it is likely that many parts of the water and sanitation sector will not present sufficiently attractive business units for private investors, unless they are parceled together with more commercially viable areas of service.

In combination, these two considerations point towards the danger of cherry-picking, that is, creating islands of private sector participation, and leaving a rump of commercially undesirable areas to be covered by a public sector provider. If such a situation is to be avoided, then the geographical scope of the units of privatization must be carefully considered in advance, even if specific privatization measures are inevitably likely to proceed on a sequential and piecemeal basis. The experience of water lease contracts and concessions in West Africa offers some examples of water privatization measures undertaken at different levels of geographical scope: the capital city only, the major conurbations and the entire country. An experiment undertaken in the Ivory Coast during the period of the National Water Plan (1974–87), which attempted to extend the experience of successful private sector water provision in the metropolitan area to the rural areas of the country, suggests that there may be considerable problems associated with such wide-scale privatization measures (OXERA/World Bank, 1995).

A third consideration concerns the cost of investment finance. Where all investment is funded from public or international funds at preferential rates, the cost of capital may bear no relationship to the size of the operation. However, where there is an increasing move toward private investment finance, whether through concessions or BOT schemes the size of the business unit may have a significant impact on the cost of capital at which the private investor is able to borrow. In a capital intensive industry requiring high levels of investment, this effect may have significant cost implications, linking back to the issue of commercial viability discussed above.

A fourth consideration is the interaction between industry structure and the structure of economic regulation. This issue is certainly relevant where privatization measures have been adopted, but may also be of interest in countries which are developing arm's length regulatory regimes within the context of continued public sector provision, for example, in Colombia. As with industry structure there are two extreme models of regulatory structure:

< the French model, which has regulation by contract occurring at the level of individual municipalities; and

< the British model, which has regulation by licence implemented by a centralized regulatory agency.

Given the scarcity of regulatory resources, particularly at the municipal level, several countries in Latin America and the Caribbean have pursued the British model creating a number of centralized regulatory agencies such as: the *Superintendencia de Servicios Sanitarios* (SSS) in Chile; the *Superintendencia Nacional de Servicios Sanitarios* (SNSS) in Peru; and the *Comisón Reguladora de Agua* (CRA) in Colombia. The position in Argentina is somewhat different with the agency *Ente Tripartito de Obras y Servicios Sanitarios* (ETOSS) having jurisdiction over the water concession for Buenos Aires, and the provincial governments dealing with regulation of provincial water concessions.

Where the centralized model is adopted, it is important to consider the optimum number of entities for the process of regulation.

On the one hand, it is important that there be a sufficient number of distinct providing entities to allow the regulator to undertake cost comparisons between them, thereby facilitating yardstick regulation.

On the other hand, it is important that there not be so many providing entities as to render the regulatory process of oversight virtually impossible by increasing the volume of information to be collected, and the number of determinations to be made.

In view of these considerations, it might tentatively be said that the optimum number of providing entities from a regulatory perspective lies somewhere between 10 and 20, as is the case in Chile where the 1977 reform process produced 13 regional entities to be regulated by the SSS. At the other extreme lies the case of Colombia where the CRA has jurisdiction over several hundred municipalities. Where this sort of structural situation arises, the regulatory agency is necessarily forced either to take a much more light-handed approach to regulation, or perhaps to focus its efforts on the relatively small number of larger service providers.

A final issue is the optimal structure from the point of view of achieving social objectives, in particular via the implementation of a cross-subsidy schemes. If social policy is to be implemented purely within the boundaries of a particular operational entity, then it becomes important that the geographical scope of that entity provides an adequate social base for cross-subsidization, that is by encompassing both low- and high-income areas. This becomes less of a constraint if it is possible for the government to operate a system of grants between entities, whereby those operating in relatively high-income areas pay into a central fund which can then be redistributed to entities operating in relatively low-income areas.

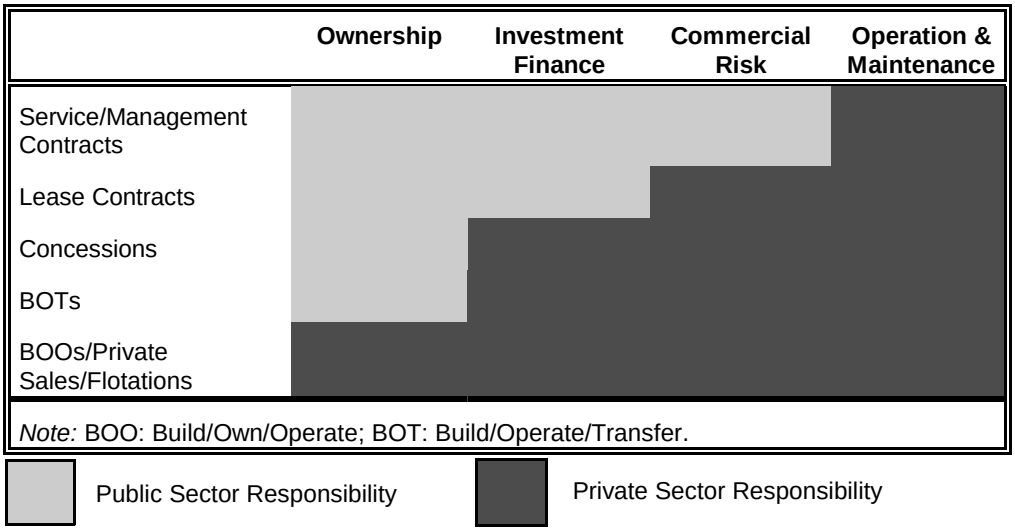
The Scope for Privatization

The discussion above indicated that competition *for* the market has been the preferred mode of private sector involvement in the Latin American water and sanitation sector. Table 6 summarizes the range of privatization mechanisms which are available, and clarifies the allocation of responsibilities between the private and public sector implied in each case.

The franchising mechanisms associated with competition for the market lie towards the more modest end of the privatization spectrum, implying a limited and well-defined role for the private sector within a wider framework of public service provision. This preference for franchising measures has also been reflected in developing country water privatization measures beyond Latin America. Examples are West Africa where lease contracts and concessions have been widely used, and in South East Asia where private finance measures such as the BOT method have been more prevalent. As illustrated in Table 7, the experience of water sector privatization in Latin America combines elements of both the West African and South East Asian experience.

Although the earliest privatization measures took the form of concessions and service contracts, there has also been a move more recently towards relying on private finance for the construction of water and waste water treatment plants under the BOT contractual form.

Table 6: Privatization Options



This overview of water privatization measures in Latin America serves to highlight a number of important features of the experience.

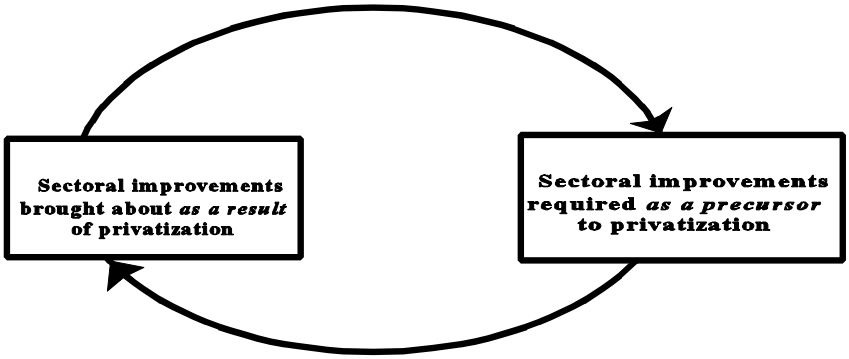
Privatization activity has been concentrated in some (although not all of) the larger countries of the region, with countries such as Mexico, Argentina and Chile at the vanguard of experimentation, and countries such as Brazil, Colombia and Venezuela proceeding at a slower pace.

With the interesting exception of Mexico, which undertook a pilot lease contract in the provincial capital of Aguas Calientes, most countries have initiated their privatization measures in the metropolitan areas. Only later, have there been attempts to replicate measures in the provinces.

Table 7: Privatization Overview

Country	Geographical Scope	Privatization Mechanism
Argentina	Metropolitan	Concession
Chile	Provincial (various) Metropolitan	Concession Service Contracts, BOTs
Mexico	Provincial (various) Metropolitan	Concession Service/Lease Contracts
Peru	Metropolitan	Concession
Venezuela	Metropolitan Provincial (various)	Concession (failed) Concession, BOTs

Figure 2: The Potential Vicious Circle of Privatization



With the exceptions of Mexico and Chile, which have preferred more limited vehicles of privatization such as service and lease contracts, most countries have opted for the concession as the instrument of privatization. Such concessions allocate investment responsibilities to the private sector and involve the temporary transfer of asset ownership.

Privatization measures have only been introduced in the last five years, making it too early to begin to judge the success of the policy. However, the failure of the proposed concession for Caracas provides some evidence that privatizations are most likely to succeed in situations where: cost recovery rates are high; there is good information on the condition of the assets; and a clear regulatory framework can be agreed in advance. Another lesson which has emerged from recent experience is the potential for private contractors to bid up prices once the concession has been awarded, as occurred in Buenos Aires.

In spite of the absence of a long experience with which to evaluate private sector participation in the Latin American water sector, the very pattern of such activity is already informative. Thus far, privatization measures have tended to be concentrated in those regions of those countries where sectoral and wider economic conditions are already comparatively favorable. Over the next five years it seems likely that the experimentation will increasingly be extended to rural areas, and smaller countries with less favorable sectoral conditions.

This second wave of experiments will be critical in determining to what extent privatization can genuinely be a solution to the problems faced by the Latin American water sector. For, though privatization offers an attractively radical solution to the twin problems of confusion of roles and politicization of management, there is also the danger that privatization may present Latin American countries with something of a vicious circle, as illustrated in Figure 2. That is to say that, on the one hand, privatization is seen as the means of bringing about the improvements required in the sector, while, on the other hand, the sector cannot be made sufficiently attractive to the private sector unless those same improvements are brought about beforehand.

Redesigning Social Policy

However, in practice it may be possible to break out of this cycle. The experience of the Mexico City water privatization illustrates that the private sector itself can be used as the means of bringing about the required sectoral improvements, by utilizing an evolutionary multi-stage contractual arrangement whereby the private operator rectifies the fundamental problems in return for playing a gradually increasing role in the provision of the service. A further, and more pragmatic, consideration is that, in some cases the goal of privatization might be the only politically effective catalyst for motivating a country to undertake the painful sectoral reforms which may, in any case, be required.

The increasing role of private investors in the provision of water and sewage services has, in some countries, prompted a reconsideration of the form of social policy towards the sector. An analysis of the redistributive mechanisms often used in the context of water provision, suggests that most countries would be well-advised to undertake a similar exercise, whether or not they are considering privatization as an eventual policy goal.

The most popular vehicle for acknowledging the social characteristics of water and sanitation services has been through cross-subsidies incorporated, more or less explicitly, into the tariff structure. These may take the form of social levies on particular user groups, or of a rising block tariff charging structure designed to favor smaller consumers.

Such empirical evidence as exists suggests that these policy measures may not be particularly helpful in assisting the most needy strata of society. Specifically, cross-subsidies tend to be quite regressive in nature. Studies of the ratio of subsidies to the richest versus poorest income quintile produced results of 2.5:1 for the Dominican Republic and 1.25:1 in Costa Rica and Argentina. The reason for this is fairly clear: access to water networks is very regressively distributed in Latin American countries. (For example, in Peru over 90% of the top income quintile have access to water supply, while less than 40% of the lowest income quintile have access). Since cross-subsidies can only reach those who are *already* connected to the network, they cannot be used to benefit the most disadvantaged groups in society which are typically not connected to the network.

The regressivity of water access is compounded by the high prices charged by water vendors, often the only source of water for urban households which are not connected to the public network. Studies have found that the ratio of the unit price of water sold by vendors to the unit price of the public water supply lies in the range 10:1–50:1 for Tegucigalpa and 10:1–100:1 for Port au Prince (OXERA/World Bank, 1995). Even taking into account the price elasticity of demand, and the fact that public water supply is typically priced well below economic cost, these figures suggest that low-income households may be spending more money on water than would be the case if they were receiving a larger volume of supply from the public network (even if the latter were priced at full economic cost). The inference is that low-income households do have a relatively high willingness to pay for water services, but may be prevented from accessing the public network owing to credit constraints or supply-side failures.

The reform of social policy toward the water and sanitation sector needs to be based around the answers to three fundamental questions.

- What is the objective of social policy towards the water and sanitation sector?
- What source of funds will be used to finance such social policy measures?
- What vehicle will be used to distribute these funds to the target population?

As far as the objective of social policy is concerned, this could be targeted either toward promoting access for those not currently connected, or improving affordability for those currently connected. On the basis of the discussion above, there may be quite a strong case for shifting the focus of social policy from affordability to access in countries with relatively low or regressively distributed rates of connection.

Once the objective has been defined, it is important to estimate the cost of the policy which will depend, among other things, on the number of households targeted by the policy, whether urban, rural, or nationwide; and the level of support provided, whether full or partial subsidy, or subsidized credit. There are essentially two sources of funds for a costed social policy scheme: either general taxation, or other utility service users. In a first best world, economic theory suggests that social policy should be funded from general taxation to avoid introducing inefficient distortions into the pricing of public services. However, since first best conditions are unlikely to hold, three sets of considerations are likely to be important in determining which of these two sources of finance should be used for the purpose of funding social policy measures.

The first consideration is the absolute availability of funds from the two sources. A country with a large fiscal deficit may simply be precluded from making further claims on the public purse. A country with a low overall rate of water connections and/or a relatively high price elasticity of demand for water, may be limited in the extent to which it can raise water bills to fund social policy.

The second consideration is the relative efficiency of tax collection and tariff collection, which will depend on the comparative extent of evasion between tax payers and water consumers.

The third consideration is the relative fairness of the two modes of finance. If the tax system is highly regressive, relying predominantly on sales taxes rather than income taxes, it may be inequitable to fund social policy from general taxation. The converse argument would apply if water tariffs display characteristics of high regressivity.

When the objective has been fully costed and the source of funding agreed, it remains to select the instrument by which the funds are to be distributed to the target population. A number of different policy instruments are identified in Table 8: connection subsidies, connection credit

Table 8: Options for the Design of Social Policy

Source of Finance	Ultimate Impact	Policy Instrument
General Taxation	Access Affordability	Connection Subsidies Connection Credit Schemes Use of Service Subsidies Tariff Structure
Utility Customers	Access Affordability	Connection Subsidies Connection Credit Schemes Use of Service Subsidies Tariff Structure

schemes; use of service subsidies; and tariff structures. An important feature of Table 8 is the fact that the source of finance is conceptually separated from the ultimate policy instrument. Thus, the fact that a social policy is funded through taxation does not mean that the funds cannot ultimately be distributed through the tariff structure as a reduction in the bill of low-income users, as is the case in Chile. Similarly, the fact that a social policy is funded through water bills does not mean that the funds cannot ultimately be distributed as a direct subsidy scheme for connections, as was the case in the Ivory Coast during the period of the National Water Plan 1974–87 (OXERA/World Bank, 1995).

A three step procedure of the kind described above should, where feasible, assist in ensuring that a country's social policy toward the consumption of water and sanitation services is both transparent and effective.

Conclusion

In summary, this paper has performed three functions:

- to provide—at the cross-sectoral level—a tentative diagnosis of the problems afflicting the public service sector in Latin America and the Caribbean;
- to identify those features of the water and sanitation sector which differentiate it from other public utility services, and which merit special attention in the context of a cross-sectoral policy initiative; and
- to analyze each of the special features of the water and sanitation sector identified, with a view to characterizing the current circumstances in Latin America, and outlining the special economic issues which arise and the options which may exist for reform.

The principal conclusions which have emerged from the paper are as follows:

First, in devising policy toward the infrastructure sector in Latin America it is important to distinguish between the problems afflicting the sector, and the fundamental causes of those problems. In this paper, it is hypothesized that the latter can be characterized as the failure to separate poachers from gamekeepers, and the politicization of management.

Second, with the noteworthy exception of certain "flagship" public sector providers of water services, the Latin American water and sanitation sector presents a picture of moderate but highly heterogeneous rates of connection and low levels of operational efficiency and cost recovery.

Third, the key distinguishing characteristics of the water and sanitation sector relative to other public utilities are identified as the low ratio of value to transportation costs making for highly fragmented distribution networks; the virtual absence of any scope for direct competition *in* the market; and the strong social character of the service as a result of positive social and negative environmental externalities in consumption.

Fourth, building on the analysis of the distinguishing characteristics of the water and sanitation sector, the key economic issues facing the industry in Latin America are the degree to which operations should be centralized or decentralized; the extent to which competition *for* the market can be effectively used to bring about sectoral improvements; and the scope for the reform of social policy towards the consumption of water and sanitation services.

Fifth, as far as the optimal horizontal structure of the industry is concerned, the analysis suggests that this is a multidimensional question which goes beyond the traditional considerations of operational and managerial efficiency to encompass the wider issues associated with environmental management; private sector participation; investment finance; regulatory control and social policy.

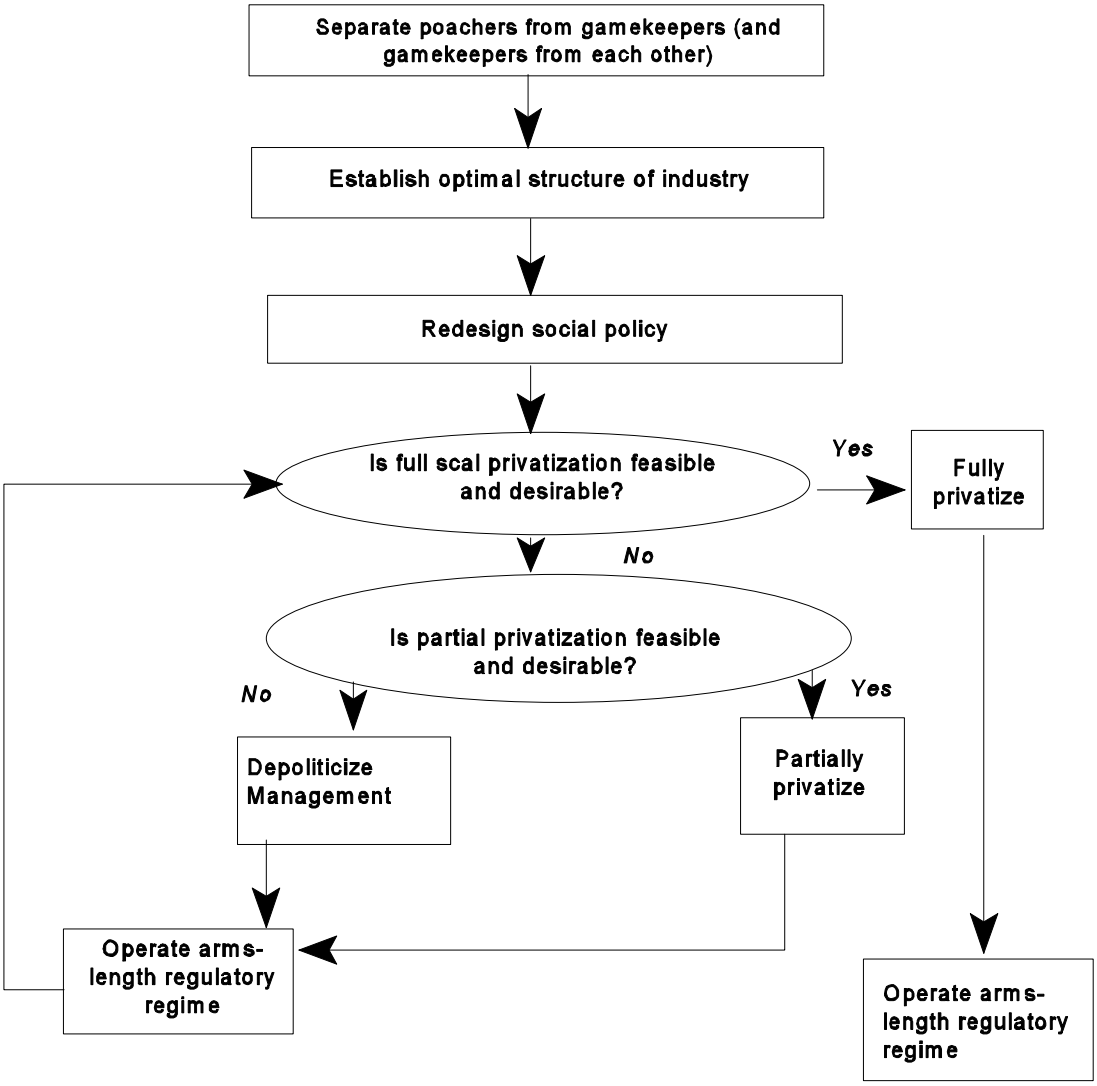
Sixth, analysis of the role of competition *for* the market shows that experiments to date have been largely confined to the metropolitan areas of the larger countries in the region where economic and sectoral conditions are comparatively favorable. As these privatization experiments are extended to smaller countries and rural areas, it will be important to evaluate the extent to which privatization can actually *bring about* sectoral improvements, rather than *necessitating* them as a prerequisite for successful implementation.

Seventh, analysis of social policy suggests that even those countries which are not compelled to reconsider their social policy as a result of some privatization initiative would nonetheless benefit from fundamental reforms. Such reforms should be based on the answers to three key questions regarding the objectives of social policy; the sources of funding, and the instruments of implementation. There is some empirical evidence to suggest that traditional social policy has focused excessively on the issue of affordability to existing users, at the expense of promoting access to those not yet connected to the network.

Finally, the overall thrust of the paper is, perhaps, best summarized diagrammatically in Figure 3 which outlines the sequence of decisions to be taken in any country contemplating reform of the water and sanitation sector. Figure 3 stresses that:

- structural issues must be settled in advance of ownership issues;
- privatization measures should be considered as lying on a continuum as opposed to constituting an all-or-nothing choice; and
- regulation is likely to have a role to play, even where privatization measures are not considered to be feasible or desirable in the short and medium term.

Figure 3: A Possible Public Utility Reform Strategy



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